

### **REMARKS**

Applicants respectfully request entry of the Amendment and reconsideration of the rejection of the claims in view of the following Remarks. These remarks are responsive to the Final Office Action of September 13, 2006, and the Advisory Action of February 1, 2001. The Advisory Action noted that the Amendment and Response filed November 13, 2006 was not entered. A Notice of Appeal was filed January 16, 2007.

Claim 55 has been cancelled without prejudice or disclaimer. Applicants reserve the right to pursue the subject matter of this claim in one or more continuation applications.

Claims 1, 3-4, 7, 29-31, 44, and 56-58 have been amended to clarify the subject matter and to correct typographical errors. Claims 1, 7 and 30 have been amended to clarify the subject matter of the claim. Claims 3, 4, 29, 31, 44, and 56-58 have been amended to correct grammatical errors and to provide for consistency in claim language. Support can be found throughout the specification, including at page 46, lines 3-6, Figures 1A, 1B, and 1C. No new matter is added by the amendments.

Claim 60-63 are new and are supported throughout the specification including at page 42, lines 28-29; page 45, lines 20-24 and lines 35 to 39, page 47, lines 17 to 24, Figure 1, and Figure 11.

### **Request for Rejoinder**

Applicants hereby request rejoinder of non-elected species and claims 29, 48, 49, and 52-54 under MPEP § 821.04(a) upon the allowability of claims 1, 4, 8, and/or 46.

### **35 U.S.C. § 112, first paragraph**

The Examiner has maintained the rejection of claims 1, 3, 4, 7-9, 11, 12, 30-33, 44-47, and 55-58 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Applicants note that claim 55 has been cancelled rendering the rejection of this claim moot. In view of the amendment and the Examiner's comments in the Advisory Action, the rejection under 35 U.S.C. § 112, first paragraph, should be moot.

While not acquiescing to the rejection and solely to expedite prosecution, Applicants have amended the claims to a variant of a wild type major coat protein of a filamentous phage.

The Examiner has acknowledged that the specification provides sufficient written description for a variant of a wild type major coat protein of a filamentous phage. In the Office Action mailed September 13, 2006 as received by Applicants, the examiner stated "Therefore, only the fusion protein comprising a heterologous polypeptide and the variant wild type major coat protein of a filamentous phage, specifically the coat protein VIII, but not the full breadth of the claimed product meet the written description provision of 35 USC 112, first paragraph". (Final Office Action at the sentence spanning pages 10 and 11). The examiner's comments in the Advisory Action at page 3 with respect to the sentence at pages 10-11 in the Office Action of September 13, 2006 do not match with the Office Action mailed September 13, 2006 received by Applicants. The quote on page 3 of the Advisory Action beginning "The instant specification and claims do not provide any guidance...." is found in the Response to Arguments section concerning the 112 rejection of claims directed to a variant major coat protein including variant major coat proteins from lambda phage, Baculovirus, T4 phage, and a T7 phage, and is located at page 12, lines 14-19 of the Office Action mailed September 13, 2006 as received by Applicants.

In the Advisory Action, the Examiner contends that Applicant's have only shown a single example of a single variant coat protein. Applicant's respectfully disagree. The Examiner's attention is directed to Figure 1 where Applicants exemplify at least 22 different variants. In addition, other variants are described and shown, for example, in Figures 11, 12, and 15. In addition, Applicants note that the specification provides an alignment and shows sequence identity for a major coat protein of filamentous phages. See e.g. page 40. One of skill in the art could readily envision a variant of a major coat protein of any of the filamentous phages based on the disclosure in the specification. Thus, Applicants submit that they have provided written description for the claimed subject matter. Applicants respectfully request removal of this rejection.

#### **Rejection under 35 U.S.C. § 102(e)**

The Examiner rejected claims 1, 8, 9, 11, 12, 30, 46, and 47 under 35 USC 102 (e) as being anticipated by Larocca (US Patent 6,451, 527). Applicants respectfully traverse this rejection.

To review, the filing date of U.S. Patent No. 6,451,527 is February 26, 1999. This patent is a continuation-in-part of U.S. Application No. 09/193,445, now U.S. Patent No. 6,589,730,

filed November 17, 1998, , which is a continuation-in-part of U.S. Application No. 09/195,379, now U.S. Patent No. 6,472,146, filed November 17, 1998, which is a continuation-in-part of U.S. Application No. 09/141,631, filed August 28, 1998, now abandoned, which claims priority from U.S. Provisional Application No. 60/057,067, filed August 29, 1997.

The cited disclosure regarding mutant coat proteins in the '527 patent is not entitled to an earlier priority date. The Examiner cites col. 9, lines 36-44 of the '527 patent as disclosing a variant of a wild-type major coat protein of a virus. However, this disclosure is new matter to the '527 patent. Larocca et al. do not disclose a variant of a wild-type major coat protein of a virus in any of the other earlier applications upon which '527 patent claims priority. See the preceding CIPs, U.S. Patent Nos. 6,589,730 and 6,472,146, both filed on 11-17-98. See, also, U.S. Provisional Application 60/057,067 (submitted with the instant amendment and response). There is no proper support for the subject matter of col. 9, lines 36-44 of the '527 patent in any of the parent applications for the Examiner to carry back the priority date to any of the prior applications. See MPEP § 2136.03(IV). For the subject matter of col. 9, lines 36-44 of the '527 patent, the earliest effective filing date is February 26, 1999. See MPEP § 706.02(f)(1). The Examiner acknowledges that the instant claims are entitled to the benefit of priority of 60/103,514 (filed October 8, 1998) and 60/134,870 (filed May 19, 1999). The effective filing date of the instant claims antedates the effective filing date of the cited disclosure regarding variants of a wild-type major coat protein. Therefore, the '527 patent is not properly considered prior art rendering the rejection moot.

The Examiner indicates in the Advisory Action that the rejection is overcome by amendment of the claims as now pending. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(e).

#### **Rejection under 35 U.S.C. § 103(a)**

The Examiner rejects claims 1, 7-9, 11, 12, 30-32, 46, 47, 55, and 58 under 35 U.S.C. §103(a) as allegedly being unpatentable over Larocca et al. (U.S. Patent 6,451,527) in view of Li et al. (*J. Biol. Chem.*, 1993, 268(7):4584-4587). Claim 55 has been cancelled rendering the rejection of this claim moot. Applicants respectfully traverse this rejection.

To establish a *prima facie* case of obviousness, three criteria must be met--a suggestion or motivation to combine references, a reasonable expectation of success, and the prior art

reference teaches or suggests all the claim limitations. MPEP § 2143; *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). A rejection under 35 U.S.C. §103(a) is based on a prior art reference under 35 U.S.C. §102. MPEP § 2141.01.

Applicant's claim 1 is directed to a fusion protein comprising a heterologous polypeptide fused to at least a portion of a variant of a wild type major coat protein of a filamentous phage, wherein the variant of the wild type coat protein has at least 3 variant residues as compared to the wild type coat protein. Claims 7-9, 11, 12, 30-32, 46, 47, and 58 are dependent on claim 1.

Applicants respectfully submit that the combination of the '527 patent and Li et al. do not disclose each and every element of the rejected claims. Claim 1 now refers to a variant major coat protein with at least three variant amino acids as compared to the wild-type major coat protein. The subject matter of the '527 patent that antedates the instant application does not disclose major coat proteins with any variant amino acids as compared to wild type. The Li et al. reference also does not disclose a variant of a major coat protein with at least three variant amino acids. Thus, even if combined these references do not disclose all of the elements of the claims. For at least this reason, the Examiner has not established a *prima facie* case of obviousness.

In addition, Applicant's submit that one of skill in the art would not have been motivated to combine these references as neither the Li et al reference nor the '527 patent are directed to a fusion protein comprising a variant of a major coat protein and a heterologous polypeptide to alter the display of a heterologous polypeptide. The '527 patent generally describes phage display technology and is not concerned with display properties of fusion proteins and the Li et al reference does not discuss phage display at all. Furthermore, there was some evidence that fusion proteins of heterologous polypeptides, especially fusion proteins of larger heterologous polypeptides and phage coat proteins would disrupt the phage coat and prevent display even when the heterologous polypeptide was fused to the wild type major coat protein. Thus, Applicants submit that one of ordinary skill in the art would not be motivated to combine these references.

Applicants respectfully request removal of this rejection.

**Interview Request**

Applicants request an interview with the Examiner and her supervisor upon receipt of these papers.

**SUMMARY**

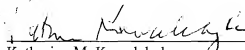
Applicants submit that the claims are in condition for allowance, and notification to that effect is earnestly solicited. The Examiner is invited to contact Applicants' representative if prosecution may be assisted thereby.

Respectfully submitted,

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